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178. Proposed by V. M. SPUNAR, Mechanical and Civil Engineer, East Pittsburg, Pa.

Find the sum of the series, $\frac{\sin x}{m^2+1} - \frac{2\sin 2x}{m^2+4} + \frac{3\sin 3x}{m^2+9} - \dots$ to infinity.

Solution by G. B. M. ZERR, Ph. D.

From the general equation in Fourier's Series, we at once derive

$$\begin{aligned} \frac{\pi}{2} \sin nx &= \sin x \int_0^\pi \sin nx \sin x \, dx + \sin 2x \int_0^\pi \sin nx \sin 2x \, dx \\ &\quad + \sin 3x \int_0^\pi \sin nx \sin 3x \, dx + \dots \end{aligned}$$

But $\int_0^\pi \sin nx \sin rx \, dx = \pm \frac{r \sin n \pi}{r^2 - n^2}$, according as r is odd or even.

$$\therefore \frac{\pi \sin nx}{2 \sin n \pi} = \frac{\sin x}{1-n^2} - \frac{2\sin 2x}{4-n^2} + \frac{3\sin 3x}{9-n^2} - \dots$$

Let $n = m\sqrt{-1}$.

$$\therefore \frac{\sin x}{m^2+1} - \frac{2\sin 2x}{m^2+4} + \frac{3\sin 3x}{m^2+9} - \dots = \frac{\pi \sinh mx}{2 \sinh m \pi} = \frac{\pi}{2} \cdot \frac{e^{mx} - e^{-mx}}{e^{m\pi} - e^{-m\pi}}.$$

NOTES AND NEWS.

Professor Jose A. Caparo, of Notre Dame University, Notre Dame, Indiana, has been given a year's leave of absence, and will spend most of his time in Cuzco, Peru, South America. F.

Before leaving for California, Editor Slaughter was called to New York State by his Alma Mater, Colgate University, to receive the honorary degree of Doctor of Science. He graduated there in 1883, and has been engaged in educational work ever since. The degree of Doctor of Philosophy was conferred upon him by the University of Chicago, in 1898, in which institution he is now an Associate Professor of Mathematics. He is the author, in collaboration with Dr. Lennes, of Columbia University, of a series of text books in mathematics for secondary schools, which are being very extensively adopted throughout the country. We congratulate Dr. Slaughter on the honor conferred upon him by his Alma Mater. F.